INSTRUCTIONS

Check your understanding with this practice assessment.

Item Count: 8

1. _____ is a process by which species change over many generations through mutation.

- A. Pollination
- B. Photosynthesis
- C. Reproduction
- D. Adaptation ✓

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

2. Adaptation is a process by which species change over many generations through _____.

- A. mutation ✓
- B. extinction
- C. decomposition
- D. digestion

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

3. The shape and size of a bird's beak had changed from the parent to the offspring.
This change in the physical beak trait is called _____.

- A. a mutation ✓
- B. an adaptation
- C. a preservation
- D. a niche

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

4. _____ is a change of traits, such as features and behaviors.

- A. Habitat
- B. Adaptation
- C. Mutation ✓
- D. Niche

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

5. Mutations over time and generations can improve _____.

- A. an organism's survival
- B. air pollution
- C. a species' survival ✓
- D. water pollution

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

6. Organisms that **cannot** _____ will die off.

- A. recycle
- B. produce their own food
- C. decompose
- D. adapt to environmental change ✓

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

7. Beneficial traits can be adapted _____ to allow species to survive environmental change and increase in population.

- A. over time and generations ✓
- B. quickly over one generation
- C. over time as the trait is learned and taught to others
- D. suddenly when a species decides to change

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

8. Biological adaptations primarily include changes that _____ in an environment.

- A. account for adversity
- B. advance life span
- C. enhance survival ✓
- D. decrease reproduction

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

INSTRUCTIONS

lease answer each question carefully. Item Count: 8

1. What is adaptation?

- ○ **A.** It is a process by which organisms create offspring.
- ○ **B.** It is a process by which species change over many generations through mutation.
- ○ **C.** It is a form of pollination used by conifers.
- ○ **D.** It is a form of excretion that organisms with a digestive system use to get rid of waste.

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

2. Imagine taking some fish from coastal waters and transferring them into a deep, dark, sea cave. Over time, the fish will breed and adapt to the new environment and survive. In future decades, scientists will explore the cave. Select the new traits scientists could possibly observe in the offspring of these fish.

Select the objects by clicking on the tile. Clicking on a selected object will deselect it.

- Brilliant colors
- Big fins
- Colorless skin
- More efficient gills
- Good eyesight
- Great hunting abilities
- Loss of vision
- Thick scales

Max. Score: 1 Scoring Type: machine-scored Item Type: select-object D.O.K.: Level 2

3. Which would die if it could not adapt to environmental change?

- ○ **A.** a rock
- ○ **B.** a car
- ○ **C.** an apple tree
- ○ **D.** a glass

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

4. What happens to organisms that cannot adapt to environmental change?

- ○ **A.** The population increases.
- ○ **B.** The organisms die off.
- ○ **C.** The population stays the same.
- ○ **D.** The biodiversity of the ecosystem increases.

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

5. How does the adaptation of traits over time benefit a species?

- ○ **A.** It decreases the species survival rate during environmental change.
- ○ **B.** It increases the species survival rate during environmental change.
- ○ **C.** It changes all of the organism's structures.
- ○ **D.** It changes all of the organism's learned behaviors.

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

5. What can be adapted over time and generations to allow species to survive environmental change?

- ○ **A.** water
- ○ **B.** air
- ○ **C.** soil
- ○ **D.** traits

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

7. The growth of a plant is influenced by its adaptations to the weather conditions. A student observes that a desert plant fails to grow in humus-rich well watered soil. The most likely reason for this is that _____.

- ○ **A.** humus prevents plant growth
- ○ **B.** a desert plant survives in less water
- ○ **C.** water easily drains out in a humus soil
- ○ **D.** a desert plant needs more nutrients in the soil for growth

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 2

8. Antelope that live in wide, open plains must adapt by using

- ○ **A.** thick fur which helps to keep them warm in winter.
- ○ **B.** long legs which help them run fast.
- ○ **C.** bright colors to help them attract a mate.
- ○ **D.** their hard outer shell to protect them.

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

INSTRUCTIONS

Check your understanding with this practice assessment. Item Count: 8

1. The _____ system includes the brain and the spinal cord.

   - **A.** circulatory
   - **B.** nervous ✓
   - **C.** muscular
   - **D.** skeletal

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

2. Tamina is creating a model to show the path that information travels in the nervous system. She has drawn sensory receptors. What should she draw next?

   - **A.** She should draw a nerve cell in the brain.
   - **B.** She should draw nerves extending from the sensory receptors to the spinal cord. ✓
   - **C.** She should connect the sensory receptors to the muscles.
   - **D.** She should label the drawing with the words "output."

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

3. Kyla says that the role of the nervous system in the body is to "gather information from the environment." Evaluate her statement.

   - **A.** Kyla's statement is correct and complete.
   - **B.** Kyla should add that the nervous system controls our organs and body systems, allowing the body to respond to changes in the environment. ✓
   - **C.** Kyla should add that the main organ of the nervous system is the skin.
   - **D.** Kyla should change her statement to say that the role of the nervous system is to gather information from the body, not from the environment.

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 3

4. Four students write what they know about sense receptors. Evaluate each student's response. Who is not correct?

   - **A.** Julia says sense organs like the ear, mouth, and skin all have sense receptors.
   - **B.** Sam says sense receptors collect information from our environments.
   - **C.** Miriam says all sense organs are the same. ✓
   - **D.** Juan says sense organs are connected to nerves.

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 3

5. Sandy was walking toward her home. She saw her mother waving to her and began to run home to greet her. The human body system that enabled Sandy to receive the external signal to see that her mother was home is the _____ system.

   - **A.** nervous ✓
   - **B.** muscular
   - **C.** circulatory
   - **D.** respiratory

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

6. Why is the brain important to the nervous system?

   - **A.** It is the largest organ in the body.
   - **B.** It processes all the information that enters the body. ✓
   - **C.** It collects all the sensory stimuli from the environment.
   - **D.** It is responsible for transporting messages around the body.

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

7. Which best explains the role of a sense receptor?

   - **A.** The sense receptor sends signals to the muscles.
   - **B.** The sense receptor processes information received from the sense organ.
   - **C.** The sense receptor determines which sensory information to gather and which to ignore.
   - **D.** The sense receptor changes the sensory information into electrical impulses and sends it to the nerves. ✓

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 3

8. Which best describes what happens after the brain receives and processes sensory information?

   - **A.** The brain decides how the body should respond to the information. ✓
   - **B.** The brain deletes the information.
   - **C.** The brain commands the sensory receptors to respond.
   - **D.** The brain converts the electrical impulses into sensory stimuli.

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

INSTRUCTIONS

Please answer each question carefully. Item Count: 12

1. Read the following scenario. In which part of the event is your nervous system receiving a message?

   - A. You touch your finger to a cactus thorn.
   - B. You pull your hand away.
   - C. You yell "Ouch!"
   - D. Your finger begins to bleed.

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

2. What are the two organs that make up the central nervous system?

   - A. the brain's cerebellum and the spine
   - B. the sympathetic and parasympathetic nervous system
   - C. the sensory and motor system
   - D. the spinal cord and the brain

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

3. Amanda suddenly woke up and smelled something burning. She crept down the stairs to see what was happening. She found her parents reading and sitting by the fire place, which was burning wood. Why did Amanda wake up?

   - A. The smell of the fire sent a signal through her blood cells to her brain and she woke up.
   - B. The smell of the fire sent a signal through her nerves to her brain and she woke up.
   - C. Amanda's nose was stuffy from a cold and she could not sleep.
   - D. Amanda was too cold upstairs to sleep.

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

4. Eyes squint instinctively to avoid light when bright light falls on them suddenly. Which two systems are involved in this process?

   - A. nervous and muscular
   - B. nervous and respiratory
   - C. circulatory and muscular
   - D. circulatory and respiratory

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

5. On a hot summer day, Jack left the pool and began to climb a ladder to his tree house. He hurt his toe by bumping it on the ladder as he climbed into the tree house. How did Jack know that he had hurt his toe?

   - A. The nerves in his hurt toe sent a signal through his body to his brain.
   - B. The blood cells in his toe sent a signal through his body to his brain.
   - C. Jack's toes became very cold and numb.
   - D. Jack's toe became smaller than before he had bumped it on the ladder.

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

6. Peter stopped suddenly on his bike because he heard a car speed by him. Which system received the external signal of hearing that enabled Peter to respond by stopping his bike?

   - A. circulatory system
   - B. excretory system
   - C. muscular system
   - D. nervous system

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

7. How is your nervous system like a pizza delivery restaurant?

   - A. It needs fuel to run efficiently.
   - B. Orders are sent out based upon the different messages that come in.
   - C. It can take a long time for messages to be delivered and sent out.
   - D. Not everyone sends his or her orders to the same location.

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

8. Complete the paragraph to explain how our body works together to process sensory information.

The different parts of our [nervous] system work together to receive, send, and react to information. The senses [organs] receive information from the environment. For example, a dog will receive sound waves through its ears. Then the brain sends a [message] to different parts of the body so that the dog knows how to [respond] to the information received. If it is a threatening sound, the brain may tell the dog to bark. If it is the sound of the dog's owner, the brain might tell the dog to wag his tail.

Max. Score: 2 | Scoring Type: machine-scored | Item Type: drop-down | D.O.K.: Level 2

9. Match each sensory organ to the type of information that the organ's receptors collect.

Sensory Organ	Sensory Information
Hand	light coming through an open window
Eyes	a skunk's foul scent
Tongue	heat from a hot stove
Ears	the bitter taste of a lemon
Nose	a loud noise blasting from car speakers

Max. Score: 2 | Scoring Type: machine-scored | Item Type: connections | D.O.K.: Level 2

10. Decide whether the statements about the nervous system are true or false.

True	False
Nerves are constantly receiving information from the senses and sending them to the brain, even while a person is sleeping.	When a person steps on a sharp rock with their bare foot, their brain is the last organ to react to the information.
If someone were to burn their hand, the brain can store that memory so that it can tell them to move his or her hand the next time a hot surface is nearby.	Each sense organ in the nervous system works on its own, independently from the brain, when the brain is busy doing other jobs for the body.

Max. Score: 2 | Scoring Type: machine-scored | Item Type: classification | D.O.K.: Level 2

11. Students in a classroom hear a tornado siren go off. Which of the following could be ways in which they respond? Read the selections and choose the correct response.

Select the objects by clicking on the tile. Clicking on a selected object will deselect it.

- The ears sense a loud sound causing the brain to send a message for their hands to cover the ears.
- Their noses sense something that smells bad causing the brain to send a message to students' hands to pinch their noses shut.
- The siren sends a message to the students' brains that causes them to remember a scary tornado event last year. It also signals their brain to send a message for the students to yell in alarm.
- The ears pick up noise and the brain tells the legs to jump out of the seat.
- Students sense sound with their ears and the brain sends a message to the hands to rub their elbows in pain.

Max. Score: 1 | Scoring Type: machine-scored | Item Type: select-object | D.O.K.: Level 3

12. Place the sentences in order of how the information is processed by the brain.

1. Information from the environment is received by a sense organ.
2. Nerves in the body connect the sense organs to the brain.
3. The signals travel as electrical pulses from the organ to the nerves in the brain.
4. The brain determines what to do with the information.

Max. Score: 1 | Scoring Type: machine-scored | Item Type: select-and-order | D.O.K.: Level 2

INSTRUCTIONS

Check your understanding with this practice assessment. Item Count: 8

1. As the amplitude of a wave decreases ___

- ○ **A.** the temperature of the light increases.
- ○ **B.** the temperature of the light decreases.
- ○ **C.** the color of the light becomes brighter.
- ○ **D.** the light becomes dimmer. ✓

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

2. Which of the following is a form of energy?

- ○ **A.** air
- ○ **B.** light ✓
- ○ **C.** matter
- ○ **D.** magnets

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

3. Which of the following is part of the electromagnetic spectrum?

- ○ **A.** light waves ✓
- ○ **B.** surface waves
- ○ **C.** earthquake waves
- ○ **D.** gravitational waves

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

4. Light cannot pass through all objects. Which of these would let light pass through it?

- ○ **A.** a rock
- ○ **B.** wood
- ○ **C.** vacuum ✓
- ○ **D.** the moon

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

5. Which type of energy can travel through a vacuum?

- ○ **A.** light ✓
- ○ **B.** sound
- ○ **C.** chemical
- ○ **D.** mechanical

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

6. The smooth, flat, shiny surface of a mirror _____ light waves evenly.

- ○ **A.** absorbs
- ○ **B.** refracts
- ○ **C.** reflects ✓
- ○ **D.** is transparent to

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

7. When light bounces off a mirror it is _____.

- ○ **A.** absorbed
- ○ **B.** reflected ✓
- ○ **C.** corrected
- ○ **D.** refracted

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

8. The image reflected from a _____ surface may be larger, smaller, or upside down.

- ○ **A.** flat
- ○ **B.** shiny
- ○ **C.** curved ✓
- ○ **D.** rough

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

INSTRUCTIONS

Please answer each question carefully. Item Count: 11

1. Light _____.

- A. takes up space
- B. is made up of matter
- C. is a form of energy ✓
- D. has a magnetic force

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

2. Which type of energy does the sun provide Earth?

- A. light ✓
- B. gravity
- C. chemical
- D. mechanical

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

3. Which of the following is a source of light?

- A. the moon
- B. our eyes
- C. fire ✓
- D. a mirror

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

4. What property of light helps you see yourself in a mirror?

- A. refraction
- B. reflection ✓
- C. absorption
- D. relativity

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

5. Which statement best explains why you can see yourself when you look at a mirror?

- A. Light is refracted as it passes through the mirror.
- B. Light is reflected, bouncing off the mirror. ✓
- C. Light is refracted, bouncing off the mirror.
- D. Light is reflected as it passes through the mirror.

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

6. The arrows in each answer choice represent light rays. Which drawing shows how light is reflected by a mirror?

- A.  ✓
- B. 
- C. 
- D. 

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

7. What type of surface scatters light unevenly?

- A. shiny
- B. rough ✓
- C. smooth
- D. transparent

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

8. What word is used to describe light as it strikes a smooth, shiny surface and bounces off?

- A. shadow
- B. energy
- C. reflection ✓
- D. wave length

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

9. What happens to light when it hits a rough surface?

- A. scattering ✓
- B. reflection
- C. absorption
- D. refraction

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

10. Rebecca visited a lake surrounded by mountains. She observed the image of the mountains on the surface of the lake's water.

Rebecca built a diorama to model what she saw. She used a postcard of a mountain scene to represent the mountains and a small mirror to represent the lake. Which is the best explanation of why her model represents what she saw?

- A. The mirror refracts light onto the image of the mountain on the postcard
- B. The mirror reflects light onto the image of the mountain on the postcard.
- C. The image of the mountain on the postcard is refracted by the mirror.
- D. The image of the mountain on the postcard is reflected by the mirror. ✓

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

11. Which set of objects below would **all** reflect light well?

- A. aluminum foil, brick wall, mirror
- B. metal spoon, tree trunk, aluminum foil
- C. mirror, metal spoon, brick wall
- D. metal spoon, mirror, aluminum foil ✓

Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

INSTRUCTIONS

Check your understanding with this practice assessment. Item Count: 8

1. What is needed for an object to start moving?

   - A. speed
   - B. force ✓
   - C. matter
   - D. electricity

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: n/a

2. Andrea is playing soccer. When she is dribbling the ball she uses short, soft kicks. Each kick moves the ball a small distance. How does her kick change when she wants the ball to go a long distance quickly?

   - A. She kicks with more force. ✓
   - B. She kicks with less force.
   - C. She kicks with the same force.
   - D. She uses a lot of short kicks.

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

3. Ray raked the leaves into a pile. He came back ten minutes later and they were scattered by the wind.

   How can the wind move objects?

   - A. It has force. ✓
   - B. It has gravity.
   - C. It has magnetism.
   - D. It has a large mass.

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

4. Which form of energy involves an object going from one place to another place?

   - A. electricity
   - B. motion ✓
   - C. light
   - D. nuclear

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

5. Rob is ice skating. His older brother comes from behind and pushes him.

   What happens to Rob's speed?

   - A. He stops.
   - B. He slows down.
   - C. He speeds up. ✓
   - D. He continues at the same speed.

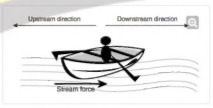
   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

6. Which of the following situations describes the use of a force?

   - A. rotting wood
   - B. pushing a swing ✓
   - C. seeing a rainbow
   - D. hearing the television

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

7. Look at the picture below to answer the question.

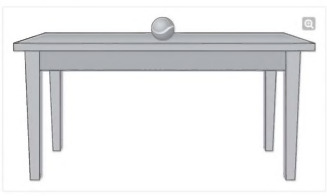
   

   A boat can move upstream if it is rowed with a force ____ .

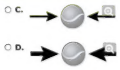
   - A. less than stream force in an upstream direction
   - B. less than stream force in a downstream direction
   - C. greater than stream force in an upstream direction ✓
   - D. greater than stream force in a downstream direction

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

8. A ball is at rest on a table.

   The arrows below represent forces. The size of the arrow shows how strong the force is. Which of the following pairs of forces acting on the ball will cause the ball to move to the left?

   - A. 
   - B.  ✓
   - C. 
   - D. 

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

INSTRUCTIONS

Please answer each question carefully. Item Count: '

1. Imagine you are riding in a car down the highway. Select the objects that you can look at to let you know the car is in motion.

Select the objects by clicking on the tile. Clicking on a selected object will deselect it.

- The baseball sitting in the seat next to you.
- The sign on the highway telling you the speed limit.
- The can of soda in the cup holder.
- The light pole you see out the window.
- The parked car that you pass on the road.

Max. Score: 1 Scoring Type: machine-scored Item Type: select-object D.O.K.: Level 2

2. Select two sentences that describe the exertion of force on a wheelbarrow.

Jack is going to use a wheelbarrow to haul rocks from one area to another. The wheelbarrow is sitting at one end of the path. Jack loads rocks from a pile nearby into the wheelbarrow. Once the wheelbarrow is full of rocks, they are ready to be moved to the opposite end of the path.

Jack lifts the wheelbarrow's handles and pushes it along the path. After arriving at the destination, he prepares to dump the rocks. He pushes the handles of the wheelbarrow upward so that the rocks fall out of the front.

Max. Score: 2 Scoring Type: machine-scored Item Type: select-text D.O.K.: Level 2

3. Choose the correct words to complete the sentences below.

A force can cause several different things to happen to an object. A force can cause objects to [move] . This can occur when two forces acting on an object are [unbalanced] . It can also happen if there is [only one] force. When there are two [balanced] forces acting in [opposite] directions, the object will remain still.

Max. Score: 2 Scoring Type: machine-scored Item Type: drop-down D.O.K.: Level 2

4. The class is playing tug of war during recess. There are 10 students on either side of the rope. What would explain that no one has moved

- A. One team has more force than the other.
- B. One team has half the force of the other.
- C. The teams have equal and opposite forces.
- D. The teams have unequal and opposite forces.

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

5. Decide if each statement below describes a change in position, a change in both position and direction, or neither.

Change in position	Change in position and direction	Neither
A soccer ball is kicked.	A rocket is shot up into the air then falls to the ground.	A glass sits on a table.
A bus travels 50 miles in a straight line.	A moving train turns north.	
	A sailboat moving forward is pushed left by a gust of wind.	

Max. Score: 2 Scoring Type: machine-scored Item Type: classification D.O.K.: Level 2

6. Decide if the motion of the objects below will be stopped by either the force of friction or by a collision with another object.

Force of Friction	Collision
A soccer ball rolls across a field.	A car rolls into a wall.
A girl on a swing eventually stops swinging.	A pitcher throws a baseball to the catcher.
	A football player is tackled during a game.

Max. Score: 2 Scoring Type: machine-scored Item Type: classification D.O.K.: Level 2

7. Which of the following indicates net work?

- A. bicycle
- B. sunlight
- C. running water
- D. guitar string

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

8. Choose the two sentences about force that are true.

Select the objects by clicking on the tile. Clicking on a selected object will deselect it.

A force always causes movement. A force is a push or a pull. Two forces must be equal. Two forces can be unbalanced. Forces are only created by people. A force always leads to work.

Max. Score: 1 Scoring Type: machine-scored Item Type: select-object D.O.K.: Level 2

9. A toy car is sitting still in the driveway. Lee kicks the car and it spins moving sideways. The car is considered in motion because _____.

- A. the car was kicked
- B. the car did a wheelie
- C. the car has four wheels
- D. the position of the car changed

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

10. Maria is pushing a big box. David comes to help her.

How does this change the force and motion of the box?

- A. It does not change the force or the motion.
- B. It increases the force and decreases the motion.
- C. It increases the force and increases the motion.
- D. It decreases the force and increases the motion.

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

11. Margarita notices that the position of her golf ball on the green has changed in comparison to the flagpole in the hole. This change is a result of _____.

- A. motion of the flagpole
- B. motion of the ball
- C. speed of the ball
- D. speed of the flagpole

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

INSTRUCTIONS

Check your understanding with this practice assessment. Item Count:

1. Three friends race from the school to the playground. They leave the school at the same time. Which friend must be the fastest?

- **A.** the friend who arrives at the playground first
- **B.** the friend who arrives at the playground last
- **C.** the tallest friend
- **D.** the oldest friend

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

2. The rate at which an object changes its position over time is called _____.

- **A.** speed
- **B.** velocity
- **C.** acceleration
- **D.** motion

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

3. Wally is driving a car at 90 kilometers per hour along a highway. A second car is ahead of Wally, but it gradually becomes closer. Soon Wally passes this car. What could be the speed of the second car?

- **A.** 0 kilometers per hour
- **B.** 80 kilometers per hour
- **C.** 90 kilometers per hour
- **D.** 100 kilometers per hour

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

4. At a bowling alley, a bowler tries to roll the ball at a fast speed. If she succeeds, she can predict that the ball will

- **A.** travel in a straighter path
- **B.** knock down more pins
- **C.** reach the pins in less time
- **D.** reach the pins in a longer time

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

5. Read each situation below and decide if the speed of the object will increase or decrease, based on the force that is applied to it.

Max. Score: 2 Scoring Type: machine-scored Item Type: classification D.O.K.: Level 2

6. Three swimmers race the length of a pool, and then back again. If Ted finishes third with a time of 1 minute and 40 seconds, what could b the time of the winning racer?

- **A.** 1 minute 33 seconds
- **B.** 1 minute 40 seconds
- **C.** 1 minute 45 seconds
- **D.** 2 minutes exactly

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

7. While ice skating, Lakeshia is pushed from behind by her friend Jamal. What is the effect on her motion?

- **A.** It causes her to stop.
- **B.** It decreases her speed.
- **C.** It increases her speed.
- **D.** It does not change her motion.

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

8. Choose the sentence that describes the car that will win the race.

Four friends are racing their remote control cars. They all begin the race at the same starting line at the same time. John's car traveled 0 miles per hour during the entire race. Max's car begins the race at 12 miles per hour and then slows to 10 miles per hour. Susan's car remains traveling at 15 miles per hour throughout the race. Mary has a car that can travel up to 18 miles per hour but its top speed for the race was 14 miles per hour.

INSTRUCTIONS

Check your understanding with this practice assessment. Item Count: 8

1. If all of the following vehicles are traveling at 30 miles per hour on a straight road, which vehicle would be the hardest to stop?

   - **A.** a bicycle
   - **B.** a compact car
   - **C.** a tractor trailer
   - **D.** a tractor trailer loaded with foam rubber ✓

   Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

2. A car is moving at 55 mph and hits a brick wall. Which of the following explains what will most likely happen to the car due to the force exerted back on it by the brick wall?

   - **A.** Its speed will decrease. ✓
   - **B.** Its speed will increase.
   - **C.** Its speed will not be affected.
   - **D.** It will climb the wall.

   Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

3. Raul is pushing a grocery cart for his mother. The wheel hits a rock which sticks in the front of the wheel. What effect does the rock have on his speed?

   - **A.** It is a force with no effect on the speed.
   - **B.** It is a force which will decrease the speed. ✓
   - **C.** It is a force which will increase the speed.
   - **D.** It is a force which will stop the speed.

   Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

4. Raul was learning to ride his bike. His father gave him a push from behind and let go. What caused his speed to pick up after the push?

   - **A.** The force was increased. ✓
   - **B.** The force was decreased.
   - **C.** The force was removed.
   - **D.** The force stayed the same.

   Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

5. While ice skating, Lakeshia is pushed from behind by her friend Jamal. What is the effect on her motion?

   - **A.** It causes her to stop.
   - **B.** It decreases her speed.
   - **C.** It increases her speed. ✓
   - **D.** It does not change her motion.

   Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

6. When you clap your hands, what happens to the energy of motion in your hands?

   - **A.** It becomes sound energy and heat energy. ✓
   - **B.** It becomes potential energy and solar energy.
   - **C.** Some is lost, and some becomes sound energy.
   - **D.** Some is lost, and some becomes chemical energy.

   Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 2

7. All of the following are examples of forces acting upon an object to change its velocity **except** _____.

   - **A.** a consistent mass ✓
   - **B.** angle of contact
   - **C.** pull of gravity
   - **D.** amount of friction

   Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

8. Acceleration happens when an object speeds up, slows down, or _____.

   - **A.** generates heat
   - **B.** changes direction ✓
   - **C.** has a chemical change
   - **D.** stays in the same place

   Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: n/a

Check your understanding with this practice assessment. Item Count:

1. In winter, some people turn on a gas fireplace to stay warm. Others use a generator or burn wood. Which, if any of these, are examples of using energy?

- **A.** All are examples of using energy because work is done in each case.
- **B.** None are examples of using energy because work is not done in any case.
- **C.** Only using the generator is an example of using energy because the generator does work to make electricity.
- **D.** Only using a gas fireplace and burning wood are examples of using energy because gas and wood are fuels.

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 2

2. Which of the following is able to store energy?

- **A.** a light switch
- **B.** a light bulb
- **C.** a wire
- **D.** a battery

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

3. How do our bodies get energy from the sun?

- **A.** We eat plants that contain energy stored from the sun during photosynthesis.
- **B.** We absorb light energy from the sun and convert it into energy we can use during photosynthesis.
- **C.** Heat energy from the sun warms our bodies to release stored energy from within our cells.
- **D.** Heat energy from the sun is used to cook the foods that we eat.

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

4. _____ are forms of energy that are released when you burn a log.

- **A.** Heat and light
- **B.** Chemical and physical
- **C.** Motion and sound waves
- **D.** Solar and electricity

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

5. _____ can be converted into several different forms at the same time.

- **A.** Elements
- **B.** Animals
- **C.** Plants
- **D.** Energy

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

6. The stored _____ energy in a match can be released later.

- **A.** chemical
- **B.** electrical
- **C.** heat
- **D.** light

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

7. Which form of energy involves an object going from one place to another place?

- **A.** electricity
- **B.** motion
- **C.** light
- **D.** nuclear

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

8. What type of energy does your body use to walk, run, and lift things?

- **A.** chemical energy
- **B.** light energy
- **C.** mechanical energy
- **D.** nuclear energy

Max. Score: 1 Scoring Type: machine-scored Item Type: selected-response D.O.K.: Level 1

INSTRUCTIONS

Please answer each question carefully.

Item Count

1. Your friend says the local hydroelectric plant creates electricity for your town. You know that this is not quite true because energy is not created or destroyed; it just changes from one form to another.

   Read the description about the hydroelectric plant. Select the sentences that will prove to your friend that energy is not being created, b
   mechanical energy is being converted into electrical energy.

   Hydroelectric plants often have reservoirs of water built up behind a dam. This is why you often see a lake by a hydroelectric plant. The plant releases some of the water through a tunnel. The moving water from the tunnel at a lower height turns the turbines connected to the generator, and the energy is changed into electricity for the town to use. The electricity flows through wires into the townspeople's homes.

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: select-text | D.O.K.: Level 3

2. When gasoline is burned, stored chemical energy is released in the form of _____ and light.

   - A. fumes
   - B. carbon dioxide
   - C. sparks
   - D. heat

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

3. You toss a ball into the air. The ball falls and then bounces back into the air. What happens to its energy?

   - A. All of the energy remains unchanged.
   - B. More energy is created as the ball bounces.
   - C. Some energy is destroyed as the ball bounces.
   - D. Some energy changes to other forms of energy.

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

4. What happens to energy when a log is on fire?

   - A. The energy changes form, but no energy is lost.
   - B. The energy stays the same, but no energy is lost.
   - C. The log loses energy and must create more energy.
   - D. The fire burns until all energy has been lost.

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

5. There are lots of ways one form of energy can be transformed into another form.
   Match the action with the correct energy transformation. *Each action will match an energy transformation. Not all of the energy transformations will have a match to an action.*

   Action

   - Kate lifts a bowling ball to the top of a slide.
   - The ball begins to roll down the slide.
   - The rolling ball makes a lot of noise on the metal slide.
   - The ball strikes the head of a nail which gets pounded into a piece of wood, heating the nail and wood a little.

   Energy Transformation

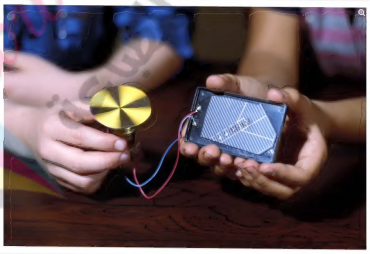
   - motion → sound
   - chemical → electrical
   - gravitational potential → motion
   - motion → gravitational potential
   - motion → thermal
   - motion → light

   Max. Score: 2 | Scoring Type: machine-scored | Item Type: connections | D.O.K.: Level 2

6. When you clap your hands, what happens to the energy of motion in your hands?

   - A. It becomes sound energy and heat energy.
   - B. It becomes potential energy and solar energy.
   - C. Some is lost, and some becomes sound energy.
   - D. Some is lost, and some becomes chemical energy.

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

7. 

   Samantha received a solar cell kit for her birthday. Samantha and her father followed the instructions in the kit. They got the solar cell t
   spin a small motor when they put the solar cell in sunlight. They had fun with this project and talked a lot about it together. When
   Samantha's mother came home from work that day, Samantha was eager to show her mother how the solar cell made the motor spin
   and to explain how it worked.

   Help Samantha with her explanation by choosing the correct terms to complete the paragraph.

   The [light] energy from the sun shines on the solar cell and is converted into [electrical] energy. This energy then flows through the wires to the motor where it is converted into [mechanical] energy. The spinning disk is evidence that [energy] from the sun has the ability to [do work]. All these changes mean that energy can come in different [forms].

   Max. Score: 2 | Scoring Type: machine-scored | Item Type: drop-down | D.O.K.: Level 2

8. Which ball has kinetic energy but not potential energy?

   - A. a ball rolling down a ramp
   - B. a ball sitting on a high shelf
   - C. a ball bouncing up and down
   - D. a ball rolling on a flat sidewalk

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

9. Which type of energy change occurs when a person rides a bike?

   - A. heat energy changes to potential energy
   - B. chemical energy changes to kinetic energy
   - C. solar energy changes to chemical energy
   - D. kinetic energy changes to nuclear energy

   Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 2

10. Which of the following can store energy?

    - A. battery
    - B. wire
    - C. plastic
    - D. rubber

    Max. Score: 1 | Scoring Type: machine-scored | Item Type: selected-response | D.O.K.: Level 1

11. Examples of how we use energy are listed below. Move each to the form of energy used.

    You hear a dog barking at a cat. Your cell phone uses a battery. The sun produces heat and light.
    A girl roller skates on the sidewalk. Your body uses energy for energy. You see lights coming towards you.
    Gasoline explodes inside a bus engine. You use a flashlight on a camping trip.

    Chemical | Nuclear | Electricity | Sound | Motion | Light